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December 1, 2006

Docket Control
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

RE: WITNESS SUMMARIES OF REBUTTAL AND REJOINDER TESTIMONY UNDER DOCKET NOS. E-01345A-05-0816, E-01345A-05-0826 AND E-01345A-05-0827

Dear Sir or Madame:

Pursuant to the procedural order dated April 5, 2006, in the above referenced Dockets, Arizona Public Serivce Company ("APS") is hereby filing written summaries for James Levine, George L. Fitzpatrick, Roger J. Mattson, Robert E. Denton and Peter Ewen.

If you or your staff have any questions, please feel free to call me.

Sincerely,

Brian Brumfield by R.P.

Brian Brumfield
Supervisor
Regulatory Affairs

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SUMMARY OF TESTIMONY GIVEN BY

JAMES LEVINE

I. Direct. (As Amended by January 31, 2006 Filing)

None filed.

II. Rebuttal.

Safe operation of the Palo Verde units is APS' overriding priority and Palo Verde has operated safely. Over the last 10 years, Palo Verde has performed well in comparison to other nuclear plants. The Integrated Performance Improvement Program that APS is currently implementing at Palo Verde is an aggressive effort to return Palo Verde performance to the level of excellence it achieved during the last decade.

GDS' recommendation to disallow $15.344 million in replacement power costs in connection with the forced outage of Units 2 and 3 in October 2005 is not appropriate. The NRC told the Commission on January 25, 2006, this outage (1) was caused by a new question that the NRC asked; (2) Palo Verde personnel took the correct action in taking the units out of service when the question could not be immediately answered; and (3) it was not an issue that Palo Verde should have reasonably addressed before the NRC raised it. Palo Verde performed equipment maintenance during the outage that would otherwise have caused a unit to be taken out of service, thereby avoiding between $4.4 million and $7.0 million in future replacement power costs.

GDS' recommendation to disallow $1.134 million in replacement power costs associated with a reactor trip at Unit 1 in August 2005 should be rejected. GDS has not presented an analysis of why Palo Verde actions were imprudent but relied on Company self-critical documents developed with the full benefit of hindsight. Additionally, GDS' criticism of Palo Verde's storage of the Unit 1 Diesel Generator A governor is inappropriate because the actual cause of the governor failure was not determined. Palo Verde personnel complied with the manufacturer's storage instruction and could not have detected the problem through a pre-installation inspection. This March 2005 outage has no bearing on this case.

APS' actions in connection with pursuing potential remedies against vendors whose equipment caused certain of the 2005 outages have been appropriate.

III. Rejoinder.

My testimony begins by addressing Dr. Jacobs' rebuttal concerning the facts of outages at Palo Verde in 2005, whose prudence he challenges. Dr. Jacobs has not presented any evidence to counter my earlier conclusions in my Rebuttal Testimony that APS was prudent regarding those outages. First, the October RWT outage was directly caused by a new question from the NRC, and the NRC Regional Administrator stated that it was not a question that he would have expected APS to have addressed earlier. Dr. Jacobs' primary response is that this Commission should reject the statements of Dr. Mallett, the senior NRC official involved, which he made when he appeared before this Commission at the Commission's invitation. Second, although Dr. Jacobs has not established a basis for any disallowance, Palo Verde prudently performed maintenance during this outage that either shortened or prevented later outages or downpowers, which would significantly reduce any disallowance otherwise found. Third, the August reactor trip was caused by an individual's error in controlling the steam generator water level, and such human error does not constitute management imprudence. Finally, the March diesel generator governor outage was not caused by imprudence because there was no indication that rust was in the governor, and Palo Verde properly stored and inspected the governor prior to installation.

Rather than focus on the facts of the 2005 outages in question, Dr. Jacobs devotes most of his Surrebuttal Testimony to *subsequent* correspondence between the Company and the NRC and to *subsequent* self-critical Company analyses. However, his testimony does not establish any causal connection between the matters discussed in those documents, e.g., cross-cutting issues and the yellow cornerstone, and the events that caused the outages at issue.

Finally, my Rejoinder Testimony addresses Palo Verde's overall performance. Palo Verde has performed very well over the last decade, and Dr. Jacobs' characterization of Palo Verde's 2005 performance is seriously flawed. For instance, there is no basis to describe Palo Verde's 2005 performance as "abysmal" when he challenges a total of only 23 days of outage time at the three units. We realize that the plant did not perform to the Company's high standards in 2005, but this does not change the fact that Palo Verde's high performance over the past decade has saved Arizona ratepayers a significant amount of money. We take seriously the improvement efforts that are in process. However, those improvement efforts have no bearing on the prudence of the four outages at issue.

SUMMARY OF TESTIMONY GIVEN BY

GEORGE L. FITZPATRICK

I. Direct. (As Amended by January 31, 2006 Filing)

None Filed

II. Rebuttal.

A number of challenges for Palo Verde in 2005 resulted in a performance level below expectations. This is common among all nuclear plants and is not significant enough to portray Palo Verde's performance as "poor." Over the 10 year period prior to 2005 (i.e., 1995 thru 2004), the performance of Palo Verde has resulted in a net benefit to APS and its customers of approximately 2,016,000 MWHs, which equates to $91.8 million in avoided purchased power costs; (using 2005 Average Purchased Power Costs/MWH).

More fundamentally, instead of the one year Palo Verde-only snapshot approach Dr. Jacobs uses in his prudence analysis, I present an approach that 1) is more consistent with the principles underlying the prospective standard that he proposes and 2) more accurately reflects the net benefits/burdens that APS' baseload generation performance confers on its customers by also looking at the performance of APS's baseload coal generating plants. After performing these calculations and analyses, I have concluded that:

- Over the 10 year period between 1995 and 2004, APS' coal baseload generating units outperformed their comparison plant groups, resulting in a net benefit of approximately 4,382,000 MWHs, which equates to $149 million in avoided purchased power costs (using 2005 Average Purchased Power Costs /MWH).

- In 2005, recognizing that all of Palo Verde's lower-than-average performance was due to outages that were not the result of alleged imprudence, the significant better-than-average performance of APS' coal units outweighed the disallowance proposed by Dr. Jacobs.

Dr. Jacob's performance standard is too general and omits key technical and fairness components. Moreover, given Palo Verde's successful performance over the long term, a performance standard does not appear to be necessary. However, should the Commission consider a performance standard, that standard should

specifically address the concerns in my testimony. Most importantly, however, such a standard should provide for an equal probabilistic opportunity for compensation to customers, for lower-than-expected baseload power plant performance, and to APS shareholders, for better-than-average baseload power plant performance. Further, all of APS' baseload power plants should be included in such a standard, not just Palo Verde.

III. Rejoinder

The purpose of my Rejoinder Testimony is to respond to William R. Jacobs, Jr.'s Surrebuttal Testimony in this docket on behalf of the Utilities Division of the Arizona Corporation Commission.

A Nuclear Performance Standard has not been proven necessary at Palo Verde, nor has Dr. Jacobs proposed a complete, workable, or fair plan. Nonetheless, if any performance standard is adopted, my earlier Rebuttal Testimony provides a number of characteristics, most importantly the inclusion of baseload coal plants, a reasonable deadband, and symmetrical rewards and penalties, which should be considered and included in any performance standard. Dr. Jacobs' Surrebuttal Testimony does not effectively challenge the inclusion of any of the above-mentioned characteristics that I recommend.

In fact, Dr. Jacobs' recent October 2004 testimony before the Georgia Public Service Commission, to which he refers in his Surrebuttal Testimony in this proceeding, supports not having a Nuclear Performance Standard, because, as he argued to that Commission, a performance standard does not change the way that a nuclear plant is operated by a utility. As Dr. Mattson pointed out in his Rebuttal Testimony, the NRC has expressed its concern on several occasions that a Nuclear Performance Standard could negatively impact safety. However, even assuming that Dr. Jacobs is correct, and that a performance standard does not affect the way that a plant is operated, this supports my conclusion that a performance standard should not be imposed on APS.

SUMMARY OF TESTIMONY GIVEN BY

ROGER J. MATTSON, PH.D.

I. Direct. (As Amended by January 31, 2006 Filing)

None filed.

II. Rebuttal

The safety standards that the NRC applies and those applicable to prudence cases such as this are markedly different. The NRC consistently uses hindsight in its safety analyses, and it is indisputably inappropriate to do so in a prudence determination. The NRC has also issued a Policy Statement on the content of economic performance standards set by State public utility commissions.

Palo Verde's performance has been within industry norms over the decade from 1995 to 2005. Palo Verde has performed better than the average nuclear plant and better than the average of plants in its peer group in almost all of the indicators that the NRC tracks. On its own initiative, APS has recently undertaken a Performance Improvement Program that involves close oversight by the NRC. Self-critical reports and assessments are always a part of such improvement efforts and are not an indicia of imprudence. The fact that APS and NRC are engaged in this way has no bearing on the prudence of the outages experienced in 2005. Given Palo Verde's long term good performance, a nuclear performance standard is unnecessary.

The October 2005 outages at Units 2 and 3 were not the result of APS imprudence. Palo Verde personnel responded reasonably to a new question the NRC raised – a question which the company should not have anticipated. Once APS answered the NRC's new question, the units restarted without any change to the equipment, training or procedures related to the systems in question.

II. Rejoinder

Dr. Jacobs argues that APS should have asked the new question about RWT air ingestion before the NRC asked it. I disagree because that question went beyond the design basis of the plant and there was no operating or other experience that called that design basis into question.

Dr. Jacobs says the RWT issue arose because NRC, not APS, was finding problems and APS was not able to demonstrate that air entrainment in the lines coming from the RWT would not disable the emergency pumps. I disagree. First, APS had no need to make such a demonstration prior to NRC's asking for it, and second, APS made the demonstration, and it was provided to NRC, almost immediately after APS was asked to do so. The demonstration came from the original licensing records for the plant. That was a reasonable approach for APS to

have taken. The contract inspector then asked the new question that had not been asked before and it took some time and one of the leading experts in the field to develop an answer.

Dr. Jacobs offers no proof for his claim that APS should have known of the new question in advance. NRC did not cite APS for failure to anticipate the new question, and NRC Regional Administrator Mallett told the ACC that, "In this instance we didn't determine that they should have found it beforehand..." Dr. Jacobs dismisses the statements by Administrator Mallett on the RWT outages. I find Dr. Mallett's statements to be consistent with the inspection report he signed and conclude that it is Dr. Jacobs' reading of the documents that is incorrect.

If APS had raised the new question before the contract inspector raised it, the RWT outages would still have occurred because technical specifications on the timing of operability determinations would have applied without regard to the source of the question that brought RWT operability into doubt. Once APS answered the new question, the units restarted without any change to the equipment, training or procedures related to the systems in question.

Dr. Jacobs persists in this case in making no effort to differentiate what could have been known from what should have been known when he relies on NRC and company documents generated with hindsight bias. NRC has stressed the use of hindsight in accident analysis since the accident at Three Mile Island. Some agencies and organizations intentionally discount the effects of hindsight bias in their retrospective analyses. NRC does not. The ACC should take care to identify and discount hindsight bias in its prudence determinations, certainly when using NRC documents, but also when asked to rely on the testimony of experts such as Dr. Jacobs who deny its existence.

APS' recent performance has not been as high as prior levels of excellence. However, over the six year period that Dr. Jacobs purports to analyze, Palo Verde's performance is nowhere near as bleak as depicted in his Surrebuttal Testimony.

Dr. Jacobs opines that if the decline in performance had been detected in 2003 it could have been corrected earlier. I note that he did not say it should have been detected earlier, and I have listed some reasons why it was not reasonable for a decline in performance to have been detected in 2003.

Dr. Jacobs dismisses NRC's concern for economic performance standards. The subject deserves more serious consideration than he has given it because of the NRC-perceived potential of such standards to create disincentives to safety. Although the NRC has offered some detailed advice on how to structure such standards if a state decides it has to have them, NRC does not favor or encourage them.

SUMMARY OF TESTIMONY GIVEN BY

ROBERT E. DENTON

I. DIRECT. (As Amended by January 31, 2006 Filing)

None Filed.

II. REBUTTAL.

I agree with GDS Associates, Inc. ("GDS") that Palo Verde was operated in a safe manner throughout 2005. Palo Verde has implemented a Performance Improvement Plan which should return it to a level of excellent performance.

GDS inappropriately used NRC, INPO and APS self-critical documents in attempts to show imprudence. GDS analyzed Palo Verde using a standard much higher than prudence. It is inappropriate to use these documents because they are usually prepared with full benefit of hindsight, and they typically do not present a balanced view of events. Additionally, they are not intended to, and do not, measure reasonableness of management actions.

The Palo Verde contracts that I reviewed are typical contracts in the nuclear industry. It is a normal practice in this industry to exclude liabilities for consequential damages for contractor negligence. It was reasonable for Palo Verde to enter into these contracts.

Palo Verde was prudent regarding the March 2005 diesel generator governor outage because Palo Verde stored the governor at a higher level than the manufacturer recommended and could not have discovered any rust in the governor during a reasonable pre-installation inspection. Palo Verde exceeded the storage requirements for the governor. The only way that Palo Verde could have discovered any rust prior to installation would have been to disassemble the governor, which is unreasonable.

III. REJOINDER.

My Rejoinder Testimony addresses two issues: (1) The March Diesel Generator Outage, and (2) the use of NRC reports and Company self-critical documents. In both areas I disagree with Dr. Jacobs' conclusions. First, Dr. Jacobs overemphasizes the role of the Diesel Generators to make his point. The Diesel Generators are very important, but they are 100% redundant and there are literally hundreds of pieces of equipment in a nuclear plant equally as important. The Company stored and inspected the governor using a standard of care

commensurate with the importance of the Diesel Generator, and there was no reason to perform additional oil samples. Second, Dr. Jacobs incorrectly characterizes the nature of the content of NRC reports and Company self-critical documents as not relying on hindsight. Even though Dr. Jacobs has extensive experience as a consultant, he has little experience in operating or managing the operation of nuclear power plants. On the other hand, I operated and managed nuclear plants for 32 years and can state with full assurance that such reports do rely on hindsight.

SUPPLEMENTAL SUMMARY OF TESTIMONY GIVEN BY PETER EWEN

I. REJOINDER.

In my Rejoinder Testimony, I respond to the comments of Staff Witness Dr. Jacobs in his Surrebuttal Testimony. Although Dr. Jacobs accepted two of the Company's adjustments to his recommended disallowance of 2005 Palo Verde replacement power costs, he failed to adequately consider the remaining adjustments.

First, Dr. Jacobs provided no support for his conclusion that prudent maintenance work performed during the October 2005 Unit 2 refueling water tank ("RWT") outage did not allow the Company to avoid a later unplanned outage or downpower. Neither did he appear to disagree in principle with the Company's quantification of the avoided replacement power costs of $5.1 million (after 90/10 sharing). In his Rejoinder Testimony, APS Witness Jim Levine provides the detailed evidence that supports the conclusion that the Company did avoid such a future outage.

Second, with respect to the impact of Palo Verde outages on off-system sales margins, Dr. Jacobs offered a high-level critique of the analysis provided by the Company, but failed to provide any analysis to demonstrate that his original calculation was more accurate than the one provided by the Company. He also mischaracterized the manner in which the analysis was conducted and erroneously concluded that the Company's assessment was performed only during hours in which the Company was not purchasing power.

Finally, Dr. Jacobs continued to take an unbalanced approach to the Company's unplanned outages. He made disallowances for poorer-than-planned performance at Palo Verde, yet ignored the better-than-planned performance at the Company's fossil units.